



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,824	04/02/2004	Yasuyuki Koyagi	65326-034	8890
7590	06/30/2005		EXAMINER	
McDermott, Will & Emery 600 13th Street, N.W. Washington, DC 20005-3096			MOONEY, MICHAEL P	
			ART UNIT	PAPER NUMBER
			2883	

DATE MAILED: 06/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/815,824	KOYAGI
	Examiner	Art Unit
	Michael P. Mooney	2883

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is **FINAL**.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-10 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-10 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \*    c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 7/21/04.

- 4) Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_.

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

**Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inui et al. (JP 11-160557).**

Inui et al. teaches a pattern writing apparatus (fig. 3) for writing a pattern by irradiating an object with a plurality of modulated light beams, comprising: a light source part for generating a plurality of light beams which are modulated (figs. 1, 3); an optical waveguide array having a plurality of input ends which are aligned and receive a plurality of light beams from said light source part, respectively, and a plurality of output ends which are aligned at a pitch smaller than the smallest one of intervals at which said plurality of input ends are aligned and output a plurality of light beams, respectively (figs. 1, 3).

Furthermore, although Inui et al. does not explicitly state “a supporting part for supporting” it would have been obvious to do so because it is conventional to provide a support for the object to be irradiated (which Inui does teach at, e.g., drawing 4) for the purpose of allowing precision optical scanning to take place.

Additionally, Inui et al. teaches a plurality of light beams from the optical waveguide array (drawing 4); and a scanning mechanism for scanning an object with a plurality of light beams from said optical waveguide array (drawing 4).

Thus claim 1 is rejected.

Inui et al. teaches wherein said light source part comprises a plurality of semiconductor lasers (e.g., drawings 1, 4, or 8). Thus claim 2 is rejected.

Inui et al. does not expressly teach “blue semiconductor lasers”. It would have been obvious to one of ordinary skill in the art to use a plurality of blue semiconductor lasers because it is conventional to use a plurality of blue lasers in polygonal-reflector-type scanning apparatus.

One of ordinary skill would have been motivated to use a plurality of blue lasers for the purpose of enhancing coupling/scanning characteristics. Thus claim 3 is rejected.

Inui et al. teaches quartz at paragraph 0044 of the English translation of Inui et al. provided in the 7/21/04 IDS references. Thus claim 4 is rejected.

Although Inui et al. may not explicitly state “wherein said optical waveguide array is formed by photolithography”, it would have been obvious for one of ordinary skill to do

so because it is conventional to form an optical waveguide array by photolithography.

Furthermore, Inui et al. teaches lithography at paragraph 0029 of the English translation of Inui et al. provided in the 7/21/04 IDS references. Thus claim 5 is rejected.

Although Inui et al. may not explicitly state "a plurality of optical fibers for leading a plurality of light beams from said light source part to said plurality of input ends, respectively" it would have been obvious for one of ordinary skill to do so because it is conventional to use a "plurality of optical fibers for leading a plurality of light beams from said light source part to said plurality of input ends, respectively" for the purpose enhancing coupling and/or ease of product use and/or cost savings. Thus claim 6 is rejected.

Inui et al. may not explicitly teach wherein a diameter of a core gradually decreases from an input end to an output end in each of said plurality of optical fibers. It is, however, conventional to use fibers as a coupling medium option between e.g., lasers and waveguides. Furthermore, it is conventional to taper fibers by gradually decreasing the diameter of the core.

One of ordinary skill in the art would chosen tapered fibers as the coupling medium for the purpose of enhancing coupling characteristics, particularly for high speed applications. Thus claim 7 is rejected.

Inui et al. teaches wherein said scanning mechanism comprises a polygon mirror for collectively deflecting a plurality of light beams from said optical waveguide array. (fig. 3). Thus claim 8 is rejected.

Although Inui et al. may not explicitly state "further comprising an aperture plate having a plurality of apertures close to said plurality of output ends, respectively" it would have been obvious to do so because it is conventional to use aperture plates/gaskets to increase coupling quality/efficiency, particularly in high density applications. Thus claim 9 is rejected.

Inui et al. may not explicitly state "wherein a width of each of said plurality of output ends ranges from 5 to 15 .mu.m and said plurality of output ends are arranged at a pitch ranging from 10 to 20 .mu.m.". These ranges are, however, conventional ranges in the waveguide art which are commonly produced. Thus it would have been obvious to one of ordinary skill at the time the invention was made to produce waveguides in the said ranges.

One of ordinary skill in the art would have chosen such ranges for the purpose of increasing the density of the waveguides thus allowing more waveguides in a given volume. Thus claim 10 is rejected.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Lee et al. (20030174255), Callison et al. (20020180869), Conemac (6134050), Hargis et al. (5534950) teach using plurality of blue lasers in polygonal-reflector-type scanning apparatus. Ogusu et al. (5917625) teaches it is common to form an optical waveguide array by photolithography. Luo (20030010904) and Macedo (4443700) teach the advantage of using tapered fiber couplers. Buer

(6005458) teaches aperture plates/gaskets to increase coupling quality/efficiency, particularly in high density applications.

Summersgill et al. (6341190), Nara et al. (20020154861), and Tabuchi (20030228105) teach a width of each of said plurality of output ends in the range from 5 to 15 .mu.m and said plurality of output ends are arranged at a pitch ranging from 10 to 20 .mu.m.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael P. Mooney whose telephone number is 571-272-2422. The examiner can normally be reached during weekdays, M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571-272-2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 571-272-1562.

  
Michael P. Mooney  
Examiner  
Art Unit 2883



Frank G. Font  
Supervisory Patent Examiner  
Art Unit 2883

FGF/mpm  
6/26/05